

REMARKS

Reconsideration of this application is respectfully requested. claims 1, 2, 5-10, 13-61, 63, 65, and 66 are pending. Claims 3, 4, 11, 12, 62, and 64 have been cancelled. All of the pending claims stand rejected.

REJECTIONS UNDER 35 U.S.C. § 112

Applicants thank the Examiner for withdrawing the pending rejection under 35 U.S.C. § 112.

REJECTIONS UNDER 35 U.S.C. § 103(a)

All pending claims stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Hartmann (U.S. Pat. No. 3,454,603) in view of Feldmann, et al. (U.S. Pat. No. 4,564,692) and Brinegar, et al. (WO 00/14081). Applicants respectfully traverse.

(1) The Court reaffirmed the *Graham* factors in the determination of obviousness under 35 U.S.C. § 103(a). The four factual inquiries under *Graham* are:

- (a) determining the scope and contents of the prior art;
- (b) ascertaining the differences between the prior art and the claims in issue;
- (c) resolving the level of ordinary skill in the pertinent art; and
- (d) evaluating evidence of secondary consideration.

Graham v. John Deere, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966).

In *Graham v. John Deere*, 383 U.S. 1, 17-148 (1966) the U.S. Supreme Court established a four factor inquiry necessary to establish a *prima facie* case of obviousness, which was reaffirmed in *KSR International Co. v Teleflex Inc.*, 550 U.S. ____ (2007). The four factors are (a) *determining the scope and contents of the prior art*; (b) *ascertaining the differences between the prior art and the claims in issue*; (c) *resolving the level of ordinary skill in the pertinent art*; and (d) *evaluating evidence of secondary indicia of non-obviousness such as meeting a long felt need, succeeding where others have failed, success in the market, etc.*

Applicants respectfully submit that Examiner has overlooked at least the factors emphasized in italics and therefore has not established a *prima facie* case of obviousness. This analysis is

applied to the invention as whole – meaning each and every of the claims in the combination recited.

First, with respect to the scope and content of the prior art and differences between the prior art and the claims at issue, the present base claim recites in pertinent part, “... wherein said purification comprises *distillation of said anhydrosugar alcohol mixture in a first film evaporator.*” The use of a film evaporator for distillation of *anhydrosugar* alcohol is entirely absent from the teaching of Hartmann, Feldmann, or Brinegar. Accordingly, the scope and content of the prior art in comparison to the present claims fails to teach all the elements of the invention as a whole and therefore cannot be said to render the claimed method obvious.

Second, with respect to secondary indicia of non-obviousness, the Examiner has not recognized the beneficial effects of purification of an *anhydrosugar alcohol* that are provided by distillation in the film evaporator as claimed. These benefits include "handling of viscous solutions, improved product purity, and low residence time, which leads to a reduction or elimination of product degradation." (Application at [0052]). As mentioned above, film evaporator purification is not contemplated by any of Hartmann, Feldmann, or Brinegar. Further, solving the problem with handling viscous solutions, low residence times and elimination of product degradation are problems recognized by Applicants and not mentioned by the cited references.

As the Supreme Court noted in *KSR v. Teleflex*, “One of the ways in which a patent’s subject matter can be proved is obvious is by noting that there existed at the time of invention, a known problem for which there was an obvious solution encompassed by the patent’s claims.” (*KSR* at 16, emphasis added). This condition does not exist in the present case because (1) the problems solved by Applicants cannot be fairly characterized from the cited art as being a “known problem” because the cited art is entirely silent about these problems, and (2) the combination of “dehydrating said molten starting material in the presence of a solid acid catalyst selected from at least one member of the group consisting of an acidic ion exchange resin and an acidic zeolite powder and without a solvent to form an anhydrosugar alcohol mixture” followed by “distillation of said anhydrosugar alcohol mixture in a first film evaporator” as recited in the

present base claim cannot fairly be said to be an obvious solution to these problems – even if the problems were known.

With respect to claim 13 and its dependents, which recite in pertinent part "... wherein said purification further comprises recrystallization of said anhydrosugar alcohol" Applicants also maintain that Hartmann teaches away from combination with Feldmann. The Office Action stresses Hartmann's statement that isosorbide "is not readily crystallized," and asserts that this is an indication that crystallization would take a significant amount of time but remains an option. Applicants respectfully submit that combining Hartman with Feldmen is exactly the opposite conclusion than one of ordinary skill in the art would draw from Hartman because Hartman is equally clear that: "[C]rystallization is not used as a method to purify [isosorbide]." Such a statement would lead one of ordinary skill in the art to avoid recrystallization, whether or not it remains an option. Together these only teach away from the process that applicants claim in combination with use of the film evaporator. Any other interpretation from the statements of Hartman are contrary to the plain reading of the reference and therefore can only be made with the benefit of impermissible hindsight.

Applicants therefore respectfully submit that the Examiner has not made a *prima facie* case of obviousness. There is no obvious reason to combine Hartmann and Feldmann; to the contrary, one of ordinary skill in the art would be lead away from making the combination. Even if combined, the purported references would not teach all of the limitations of the claims. For at least these reasons, the rejection under Section 103(a) should be withdrawn. Applicants respectfully request that the rejection be withdrawn and the claims allowed.

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and as such, the Application is in condition for allowance. If the Examiner believes that personal communication would expedite prosecution of this Application, the Examiner is invited to telephone the undersigned at the number provided.

Respectfully submitted,

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Duane A. Stewart III
Reg. No. 54,468
BUCHANAN INGERSOLL & ROONEY PC
One Oxford Centre
301 Grant Street, 20th Floor
Pittsburgh, PA 15219-1410
(T) 412-562-1622
(F) 412-562-1041
duane.stewart@bipc.com